

**Advanced Subsidiary GCE**

## G483

**PHYSICS A**

Unit G483: Practical Skills in Physics 1:  
Evaluative Task

**Specimen Task**

**For use from September 2008 to June 2009.**

**All items required by teachers and candidates for this task are included in this pack.**

#### **INFORMATION FOR CANDIDATES**

- Evaluative Task: Determining the resistivity of a metal wire.

#### **INFORMATION FOR TEACHERS**

- Mark scheme.
- Instructions for Teachers and Technicians.

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**PHYSICS A**

Unit G483: Practical Skills in Physics 1:  
Evaluative Task

**Specimen Task**

**For use from September 2008 to June 2009.**

Candidates answer on this task sheet.

### INSTRUCTIONS TO CANDIDATES

- Answer **all** parts of the task.

### INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each part.
- The total number of marks for this task is **10**.

### ADVICE TO CANDIDATES

- Read each part carefully and make sure you know what you have to do before starting your answer.

FOR TEACHER'S USE		
Part	Max.	Mark
TOTAL	10	

This task consists of **5** printed pages and **1** blank page.

## Introduction

You have already carried out an experiment to determine the resistivity of a metal wire. You are now going to assess the reliability of your experimental value for the resistivity and suggest how you would improve the experiment if you had to do it again.

In this assessment, you have an opportunity to evaluate your results and experimental procedures

## What you have to do

You are expected to answer on the question paper in the spaces provided on pages 3 and 4, with the following headings:

- Evaluating my results (1, 2, 3 and 4 below)
- Evaluating my methodology (5 and 6 below)

**If you do not have reliable data from your earlier experiment, then you may use the data below.**

Diameter of wire:  $0.27 \pm 0.01$  mm      Material of wire: Nichrome

The potential difference  $V$  across the terminals of the power supply is  $5.0 \pm 0.1$  V.

$x / \text{m}$	$I / \text{A}$	$\frac{1}{I} / \text{A}^{-1}$
0.200	0.44	2.27
0.250	0.38	2.63
0.300	0.34	2.94
0.350	0.30	3.33
0.400	0.28	3.57
0.450	0.25	4.00
0.500	0.23	4.35

- 1 Determine the percentage uncertainty in  $V$ .
- 2 Determine the percentage uncertainty in the cross-sectional area,  $A$  of the wire.
- 3 Determine the percentage uncertainty in  $\rho$ .
- 4 Determine the percentage difference between your value of  $\rho$  and a data book value.
- 5 Comment on the accuracy and reliability of your experiment.
- 6 Suggest some of the limitations of your experiment and how these can be improved.

**Total [10]**

**Evaluating my results**

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**[5]**

**[Turn over**

**Evaluating my methodology**

..... [5]

**[Total: 10]**

**END OF TASK**

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**Specimen Mark Scheme**

The maximum mark for this task is **10**.

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	Answer	Max Mark
	<b>Strand C: Quality 3</b>	
1	Determines percentage uncertainties in $V$ and $A$ correctly; Attempts to determine the percentage uncertainty in $\rho$ <i>correctly</i> . (e.g. adds percentage uncertainties in $V$ and $A$ or draws a worst fit line); Determines the percentage difference between the experimental value of $\rho$ and a data book value of $\rho$ , setting out all the calculations clearly.	[3]
2	Comments on the accuracy and reliability of the experiment. E.g. refers to scatter of points about the best fit line; gives some meaningful detail regarding the difference in values for $\rho$ .	[2]
	<b>Strand C: Quality 3</b>	
1	Identifies one relevant limitation of the experimental procedure; Identifies further relevant limitations to the experimental procedure.	[2]
2	Suggests an appropriate improvement to the experimental procedure; Suggests further appropriate improvements to the experimental procedure.	[2]
3	Suggests detailed limitations and improvements to the experimental procedures which clearly link to minimising significant sources of error in the experimental procedure.	[1]
	<b>Total</b>	<b>[10]</b>

**Instructions for Teachers and Technicians**

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**There is no time limit for this task, but it is expected that it can be completed within one timetabled lesson.**

It is assumed that you will have completed the teaching of the above module before setting your students this task. This module has links to other modules which contain related learning experiences – please refer to your specification.

Candidates may attempt more than one evaluative task with the best mark from this type of task being used to make up the overall mark for Unit G483.

### **Preparing for the assessment**

It is expected that before candidates attempt Practical Skills in Physics 1 (Unit G483) they will have had some general preparation in their lessons. They will be assessed on a number of qualities such as demonstration of skilful and safe practical techniques using suitable evaluative methods, the ability to make and record valid observations, and the ability to organise results suitably. It is therefore essential that they should have some advance practice in these areas so that they can maximise their attainment.

### **Preparing candidates**

At the start of the task the candidates should be given the task sheet.

Candidates must work on the task individually under controlled conditions with the completed task being submitted to the teacher at the end of the lesson. Completed tasks should be kept under secure conditions until results are issued by OCR.

Candidates should not be given the opportunity to redraft their work, as this is likely to require an input of specific advice. If a teacher feels that a candidate has under-performed, the candidate may be given an alternative task. In such cases it is essential that the candidate be given detailed feedback on the completed assessment before undertaking another Evaluative Task. Candidates are permitted to take each task **once** only.

### **Assessing the candidate's work**

The mark scheme supplied with this pack should be used to determine a candidate's mark out of a total of 10 marks. The cover sheet for the task contains a grid for ease of recording marks. To aid moderators it is preferable that teachers mark work using red ink, including any appropriate annotations to support the award of marks.

### **Notes to assist teachers with this task**

Teachers must trial the task before candidates are given it, to ensure that the apparatus, materials, chemicals etc provided by the centre are appropriate. The teacher carrying out the trial must complete a candidate's task sheet showing the results attained, and retain this, clearly labelled, so that it can be provided to the moderator when requested.

### **Health and Safety**

Attention is drawn to Appendix E of the specification.

### **Notes for Teachers**

This task should not be given to pupils until the previous task is complete.

Pupils will need access to the book value for the resistivity of the material used.